by rubbing charcoal or some colouring substance into the wound. The hunting-grounds of this people extend from Mistassinni Lake to the Atlantic coast of the Labrador peninsula; and there exist traditions among both Nasquapees and Montagnais, of former battles with the Iriquois, or Mohawks, near Trout Lake, at the source of Coldwater River, which must have occurred more than two centuries ago. Their conflicts with the Esquimaux have continued down to a very late period. When we take into consideration the great jealousy with which the Indian races of the American continent, speaking different languages, regard the invasion of their territory, or hunting-grounds, the vast extent of surface over which the Cree nation has established itself, cannot fail to possess great interest to the ethnological inquirer. The hunting-grounds of the Cree nation extend from the foot of the Rocky Mountains to the Atlantic coast of Labrador, a distance exceeding 2500 miles, with a mean breadth of 600 miles. Before the advent of the white man, and prior to the general destruction of forests, mosses, and lichens, by fire, the Nasquapees were a numerous people, feeding on the reindeer and rabbit, which were everywhere abundant, and on the porcupine, which was formerly very common on the south flank of the table-land.

VI.—*Notes on the Mountains and Glaciers of the Canterbury Province, New Zealand.* By DR. JULIUS HAAST, M.D., F.G.S.

Read, February 8, 1864.

IN looking at a map of New Zealand (see p. 56) we observe that a longitudinal mountain-chain of great magnitude, forming the watershed of the island, runs from north-east to south-west, the continuity of this chain being broken through only in very few places, otherwise presenting high and abrupt walls of great altitude through its whole length.

This backbone, as it has sometimes not inappropriately been called, begins at the south-western end of the Middle Island, and continues to the east cape of the Northern Island, broken through by Cook's Straits, and by a few rivers flowing through lateral and oblique fissures. It would make this memoir far too long, were I to enter into more details concerning the remarkable features of this magnificent chain throughout both islands, and I shall therefore treat of that portion only which occurs in the province of Canterbury.

It reaches its greatest altitude in this province, where, clad in a garment of dazzling snow, from which enormous glaciers descend, it presents us with such wild and fantastic forms, that it has with justice been named the Southern Alps. Beginning at Mount

Aspiring, the southern boundary of our province, the Southern Alps stretch, with the exception of a few passes, of which I shall speak in the sequel, to a remarkable col about 3500 feet high, called Harper's Pass, which forms the northern boundary. It is here, we may presume, that the Southern Alps proper terminate, because at the north of this col, which leads from the sources of the Hurunui (east coast) to those of the Taramakau (west coast), the central chain is singularly broken, and also decreases in altitude, although it rises again in the Spencer Mountains (Nelson province), and attains a great altitude in Mountains Franklin and Humboldt.

Looking at the different systems of the Alps; we meet, south of the Hurunui Pass, with a large mountain-mass, which still preserves the Maori name of Kaimatau (eat birds). From the perpetual snow with which it is covered, numerous glaciers—some of considerable size—descend, giving rise to the main branch of the Waimakiriri (cold water), flowing to the east coast, whilst on its still unexplored western slopes, the outlets of some others fall, partly into the Taramakau and partly into the Okitika and Arahaura rivers (west coast).

A high pass leading into the river Arahaura, and apparently very difficult of access, exists here at the southern slopes of the large pyramidal mass of Kaimatau. The only knowledge of this pass which I possess was obtained through the description of a few aged natives at the west coast, who in former times had travelled by it; but the narrators never ended their description without adding that it was exceedingly bad and rough, and therefore in disuse.

At the southern side of this truly Alpine pass, another high mountain-system rises, of the orographical features of which we do not as yet possess any positive knowledge, although surveyors have chained up the rivers descending from it, almost within sight of its glaciers. The only view which I obtained of this large mountain-mass was from the summits of Mount Torlesse and Big Ben, in the Thirteen-mile bush-range, both on the southern banks of the Waimakiriri. The pyramidal form is also predominant here. Enormous snow-fields lie on its sides, from which large glaciers descend towards the valleys. The altitude of the highest summit I estimated at not less than 10,000 feet.

This system again ends near the southern and main branch of the Rakaia, and a pass of about 4500 to 5000 feet high brings the explorer to the west coast, by following the river Okitika. This pass was discovered in 1859 by Messrs. Butler and Baker, whilst seeking a road to the west coast; but rainy weather setting in, added to want of provisions when on the col, compelled them to abandon their project. The late Mr. Whitcombe was, last summer,

the first who, by crossing here and following the Okitika, reached the west coast; and we have the more deeply to deplore the sad loss of this accomplished engineer and surveyor, as his field-books, containing the results of his arduous journey, were also lost. This col is situated on the northern side of the main branch of the Rakaia, and forms also the northern boundary of Mount Tyndall, so named by me in honour of Professor J. Tyndall, the eminent natural philosopher.

Mount Tyndall consists of a mighty system of mountains culminating in one large pyramidal mass of about 11,000 feet, the latter generally concealed by a great many surrounding peaks of nearly the same altitude. It is one of the principal centres of our Alps, and of great extent. Enormous snow-fields lie on its flanks, from which large glaciers descend, some of which belong to the largest in the whole range. The main sources not only of the Rakaia, but also of the Rangitata, and the principal glacial source of the Godley River, which forms Lake Tekapo, are here situated; the outlet of the latter constituting one of the principal sources of the Waitaki.

This range terminates with a low *névé* saddle, from 7500 to 8000 feet high. An isolated mountain, which I have named Mount Petermann, in honour of my accomplished friend Dr. Petermann, the eminent geographer, rises on its northern side and is also covered with perpetual snow.

Again, south of Mount Petermann, another remarkable break is observable, but my attempt to reach it was not crowned with success. My travelling companions, although willing to follow me anywhere, were not experienced in glacier travelling, and, as I wished to avoid the possibility of any accident, being unwilling to risk the life of another, I had to return when only a few miles from the pass.

The Southern Alps, south of this latter col, begin to reach a still higher mean elevation, the snow and *névé* fields gain in extent, and give origin to the largest glaciers of our Alps. A remarkable cluster of mountains is here assembled round a common centre, to which latter I gave the name of Mount Elie de Beaumont, and which, unlike the other Alpine giants, has not only soft outlines, but is everywhere covered with a uniform sheet of snow, and consequently does not show one single rocky spot either on its sides or summit. This system gives rise, as before stated, to glaciers of great extent, the outlets of which on the eastern side form some of the most important tributaries of the rivers Godley and Cass, falling into Lake Tekapo, and of the river Tasman, forming Lake Pukaki.

I observed no col of any consequence in this stupendous chain, the average height of which may be estimated at 10,000 to 11,000

feet, and which terminates in Mount Cook, or Ahraraigi (Piercer of Heaven). The latter not only rises very remarkably above all the other snowy giants but is still more conspicuous, from the fact that at its western side also it is separated from Mount Stokes by a steep col, about 7000 to 8000 feet high, well visible from the Hooker and Mueller glaciers.

On the south-western side of this col the New Zealand Alps rise again to a great altitude, Mount Stokes being not much inferior to Mount Cook. They continue towards the south-west, under the name of the Moorhouse range, to Mount Holmes, where they divide into two branches, of which the western one, under the appellation of the Hooker and Gray ranges, continues to the southern bank of the river Haast, so named by order of the Provincial Government of Canterbury; whilst the eastern branch, under the names of the Ritter range, Mounts Ward and Brewster, strikes in a southerly direction to the remarkable break in the Southern Alps, which I discovered in January last, and by which I reached the west coast.

As this fissure or pass is perhaps unique in physical geography, I take the liberty to copy from an official report what I have said about it:—"Twenty miles above the mouth of the Makarora at Lake Wanaka, the river enters the fissure, coming from the east as a deep chasm of vertical cliffs from the central chain, and showing there the semi-opaque bluish colour which betrays a glacial origin. The rent still continues in the same direction, a tributary which I have called the 'Fish-stream' flowing through it and joining the Makarora. After travelling half a mile, we found it impossible to proceed up the bed of this stream, vertical cliffs rising abruptly from the edge of the water, which falls down over immense rocks. We were therefore obliged to ascend to a considerable altitude on its eastern bank, and to continue our journey through dense bush along the steep sides of the mountains.

"After travelling for 3 miles, partly over very rugged ground, we again met the 'Fish-stream' coming from the west, and still flowing in a deep and rocky channel; but observing still the opening before us, we again went forward in the same direction, and arrived in another mile on the bank of a very small watercourse, which we followed for about a mile.

"Observing that its banks consisted of débris, about 15 feet high, sloping as it seemed to me to the north, I ascended and found to my great satisfaction that the level of the swampy forest had really a slight fall in that direction; soon the small waterholes between the sphagnum (swamp-moss) increased, a small watercourse was formed, which ran in a northerly direction, and thus a most remarkable pass was found, which in a chain of such magnitude as the Southern Alps of New Zealand, and where no

break or even available saddle occurs throughout their course north of this point in our province, is probably without parallel in the known world.

"After three observations on this pass, calculating the average stand of the barometer at the sea-level, and the altitude of Lake Wanaka, 974 feet, as given by McKerrow of Otago, with which my own observations closely correspond, the altitude of the pass is 1612 feet above the level of the sea, or 638 feet above Lake Wanaka. As before stated, there is properly speaking no saddle over which a traveller has to go, being only obliged to cross from one watercourse to another, ascending a bank of about 15 feet of loose shingle thrown across the rent, and arriving on a flat of very small slope, covered with open forest, which in half a mile brings him to another small watercourse flowing north. I may here add that at this point the mountains on both sides reach their highest elevation, being covered with perpetual snow, and glaciers of large extent."

Both chains unite again in Mount Stuart, on the western side of the remarkable pass referred to, and continue without interruption in the same south-west direction towards Mount Aspiring, the southern boundary point of our Alps; but it is nevertheless true, that the Southern Alps on the western side of this break begin to lose their continuity, being generally broken in sharp pyramidal peaks with deep but generally inaccessible saddles between them. Such a saddle, for instance, we observed at the head of the Young, one of the tributaries of the Makarora, north of Mount Alba, and which, according to Maori tradition, was used formerly to reach Jackson's Bay.

The dense covering of forest in the valleys, and of sub-Alpine and Alpine vegetation on the mountain-sides, has hitherto impeded the exploration of every valley to its head in the central chain, so as to be certain that no other passes available for mountaineers remain to be discovered; but I must state my conviction that for the general intercourse between the eastern and western sides, so far as is at present necessary, the pass at the head of the Hurunui and Taramakau, in the north of the province, and that at the head of the rivers Makarora and Haast, in the south, will at present be quite sufficient. The engineers of the Provincial Government of Canterbury have nearly finished a bridle-track over the first-named pass to the mouth of the Grey, which will in course of time be changed into a road for carriages and drays. The steep slopes of the Southern Alps are situated on the western side, whilst on the eastern, large lateral chains often little inferior in altitude to the main chain, but mostly running in a north and south direction, branch off from the principal systems.

In a line parallel with the direction of the Alps, we meet with a

series of remarkable lakes following the direction of the large valleys. It would lead me too far, were I to enter at full length into the causes of their formation, which prove, by the enormous moraines by which they are surrounded or to express it still better dammed up, to be of glacial origin; and I think that nowhere in the temperate zones such clear signs of the glaciation of a large district, in the postpliocene period, are to be met with as in the New Zealand Alps.

The moraines are as clearly defined, and the angles of the large blocks of which they are composed as sharp and fresh as if they had only been deposited during the last few years, and we can easily follow the large and generally straight shingle-river valleys above them, which are sometimes 3 miles broad, and have an average fall of 40 to 50 feet in the mile, till we arrive at the present glaciers, of which the principal still have often an average breadth of $1\frac{1}{2}$ mile at their terminal face, and present us with most remarkable phenomena. No link is missing to show us that the formation of these magnificent Alpine lakes is due to the former extension of the present glaciers, which now form the feeders of these lakes, and we can follow the former lateral moraines to the altitude, where, in the glacial period, an uniform sheet of ice covered these mountain masses, which during a period of great submergence remained alone elevated above the sea.

It is evident that a mountain chain of such altitude, and covered with such enormous masses of perpetual snow, must give rise to extensive glaciers; the more so as the insular climate of New Zealand is of a very moist nature, almost every wind bringing rain, or in higher altitudes snow, in its Alpine regions.

Amongst the glaciers,* the great Tasman glacier is the most important, its length being 12 miles, whilst even at its terminal face its breadth is $1\frac{3}{4}$ mile. It is the glacier which reaches lowest in New Zealand, as its extremity lies only 2772 feet above the level of the sea. The terminal face is easily accessible, even for horsemen, when once they have fairly come into the river-bed above the delta swamps, which, for about 6 miles above its entrance into the lake, fill its whole valley.

It was with great difficulty, when travelling up it, that I found my way through the old lateral moraines, lying on the eastern side above the drift formation; the passage being barred by enormous masses of huge blocks, over which it was difficult even to lead a horse. For several miles upwards the great Tasman glacier is entirely covered by moraines of great depth. No visible stream flows from its terminal face, all the water

* Dr. Haast sent to the Society a number of well-executed water-colour drawings representing the Alpine scenery of the Canterbury Province, and the following descriptions of glaciers are compiled from his explanations of the different views.—ED.

disappearing instantly between the great masses of large boulders of its terminal moraines. Only at one spot, in the centre of the terminal face, is the ice visible; but we find above it, on the glacier, a channel where, in weather favourable to the melting of snow or during heavy rainfalls, a great body of water flows, with which, below the terminal face, a large channel in the river-bed, usually dry, corresponds.

The main body of the Tasman River finds its exit on the eastern side of the glacier, about 200 yards above its terminal face, from a number of caves and fissures, joining the large outlet from the Murchison glacier, which had already washed its eastern side for more than 2 miles. The river meanders through its valley, here 2½ miles broad, in at least 20 channels; it has a great body of water, but in fine weather is easily transitable on horseback by any one having knowledge sufficient to select the fords.

To its junction with the Hochstetter glacier, descending in a deep valley between Mount Cook and Mount Haidinger, this glacier (the great Tasman) has only lateral moraines, but after the junction a large medial moraine is formed which very soon covers the whole glacier; only here and there large hollows filled by pools of water of a deep blue colour, and often of large extent, being 200 to 250 feet deep, betray in their perpendicular walls the existence of ice. An interesting feature is here revealed, showing that the glacier as soon as it finds an opportunity to expand itself, does so, by pressing its masses into the broad valley of the Murchison glacier, the terminal face of which lies about 1½ mile distant from the lateral edge of the Tasman glacier, which afterwards is, as before stated, continually washed by the outlet of the smaller one.

For 3 miles from its terminal face upwards, the outlet of the Murchison glacier flows along the eastern side of the Tasman. This lies in a valley, 1¼ mile broad; but it does not reach the Tasman, its terminal face lying 2 miles from it; and we may attribute the fact that it melts before it reaches the other, to the circumstance that it is more exposed to the sun, and that it is not like the Tasman glacier entirely covered with enormous moraines. But appearances show very clearly that the Murchison advances rapidly towards the Tasman glacier. In fine weather the outlet of the former runs on the eastern side of its broad shingle valley; but there is every proof that in heavy freshes the whole valley is entirely covered by the rushing waters of the Murchison outlet, which must contribute in no small degree to destroy the main glacier.

Two other glaciers of large extent are the Classen and Godley glaciers. The former descends from the nucleus of mountains which I have called Mount Elie de Beaumont, whilst the last-mentioned

(the Godley) brings down the principal icy masses from Mount Tyndall. The terminal face of the Godley glacier is 3583 feet, that of the Classen glacier 3528 feet above the level of the sea. The former would descend much deeper into the valley, did not the outlet of another glacier wash and undermine the terminal face, and thus destroy it bodily, an instance of which I observed after a heavy fresh, when large blocks of ice were washed down the river for several miles. The lateral moraines of both glaciers reach within 30 to 40 yards of each other, and there is no doubt that as the glaciers are advancing they will soon meet, and then present a glacial face of 3 miles, the Godley glacier being at present at its terminal face $1\frac{1}{2}$ mile and the Classen glacier, $1\frac{5}{8}$ mile broad. The valley, 4 miles below the glacial cave of the Classen glacier is 2 miles broad, covered with shingle, over which the turbid waters of the river rush in many branches.

On the 5th of March, 1862, crossing the river at this spot early in the morning, after a freezing night, I met with only 5 branches which could possibly be passed on foot by an energetic and strong man; but when returning in the evening, after a hot and cloudless day, there were 16 branches, some of them so rapid and deep that even the horses had some trouble to stand the force of the current.

The Classen glacier is advancing, some old moraines overgrown with a luxurious vegetation being already half enveloped by the blocks of rocks thrown down upon them. Both glaciers are very much covered by moraines. The great Godley glacier fully deserves its appellation of the New Zealand "mer de glace," it being at the junction of its western tributary more than 2 miles broad.

About 3 miles below the terminal face of the Macaulay glaciers, on the slopes of Mount Forbes, large glaciers of the second order are situated, which, ending abruptly, send down two very fine waterfalls of about 800 feet high, which, after the melting of the snow, heavy rain, or other favourable circumstances, offer a wonderful sight. The main glacier has the peculiarity that it expands in a fan-shaped form, crevasses running towards a common centre, which may be placed where the glacier passes between two buttresses of rock. It is remarkably free from moraines. Another large glacier descends from Mount Forbes in a narrow gorge, and with a steep incline. The altitude of the glacial cave of the main glacier is 4375 feet above the sea-level.

I must not omit to mention two other glaciers also of large extent, the Hooker glacier, so called in honour of my distinguished friend Dr. Joseph D. Hooker, descending from the south and south-western slopes of Mount Cook proper, being enlarged by several branches from Mount Stokes and the Moorhouse range; and

the other opposite to it, the Mueller glacier (so named in honour of my eminent friend Dr. Ferdinand Müller, of Melbourne), descending from the south-western slopes of the Moorhouse range. The glacial cave of the Müller glacier lies 2851 feet above the sea-level.

The rest of the glaciers do not attain such large dimensions, although some of them are still 500 yards broad, and deserve a few words of description.

The Ashburton glacier, main source of the river Ashburton, descending from Mount Arrowsmith, is one of these. The altitude of its terminal face is 4823 feet above the level of the sea. It was discovered and visited by me in May, 1861. About 300 feet below the present extremity of the glacier an old moraine stretches across the valley. The mean altitude of the range is about 10,000 feet; it consists of a large series of alternating palæozoic sandstones and slates, standing vertically, or at least at a very high angle; their disintegration has given rise to the formation of numberless peaks, needles, and pinnacles. The Ashburton glacier is one of those few New Zealand glaciers of the first order which are pretty free from any moraine, except a ground moraine.

There is an umbelliferous plant very abundant here and peculiar to the Alpine scenery of New Zealand. It is called by the shepherds "bloody Spaniard" (*Aciphylla grandis*, Hook. fil.), its leaves being very pointed like a poniard, exceedingly hard, and often 3 ft. long. My party, both men and horses, suffered greatly from its punctures, body and limbs being covered with blood when working our way through it.

Another of the smaller glaciers is the Clyde, main source of the river Clyde, which is again the main branch of the river Rangitata. Its terminal face is 3702 feet above the level of the sea. The glacier, the main body of which descends from a valley to the left of the spectator from Mount Tyndall, is entirely covered by a moraine, and the ice is visible only at a few spots, where the glacier forms step-like terraces. At its terminal face it is 1300 feet broad and about 100 feet high, and is therefore only of small size in comparison with others in our Alps, but does not fail nevertheless to be attractive to the visitor, as not only is the glacial cave high, and the deep azure tints of great effect, but the vertical walls of ice, about 120 feet high, also present us with a spectacle worthy of admiration.

During my visit in April, 1861, I observed in this vertical wall, about 30 feet below its débris roof, a round hole through which a little streamlet fell like water from the gutter of a house. This glacier is difficult of access, because the river issuing from it, setting often against perpendicular cliffs, can only be crossed after a con-

tinuation of fine weather and then only on horseback by men free from giddiness.

Amongst the different Alpine lakes of the province of Canterbury, Lake Pukaki is without doubt the most picturesque. It lies 1746 feet above the sea, is 10 miles long and 4 miles broad, and its formation is one of the most interesting objects which can be presented to the geologist and physical geographer. Nowhere, so far as my knowledge extends, are the proofs so convincing that it has, like similar lakes in other Alpine regions, been formed by the retreat of an enormous glacier. But it may truly be stated that the view from its shores towards its sources will rival in beauty and majesty any known views in the world.

In the centre, Mount Cook, resembling a large white tent, rises above the other ice-clad giants, of which Mount Stokes and Mount Sefton to the south, and Mount Haidinger to the north, are the most conspicuous. The bed of the river Tasman, nearly as wide as the lake itself, continues for 23 miles in a straight line to the base of Mount Cook; here dividing into two branches, of which the eastern one is the broadest and most important. In this main branch, 2 miles above the southern foot of Mount Cook, terminates the great Tasman glacier, the largest of all New Zealand glaciers. On both sides the ranges present us not only with *roches moutonnées*, but also with terraces cut into the rock, sloping down at such an angle that their fall can be accurately measured (from $1\frac{1}{2}$ to 4°).

VII.—*Expedition to the West Coast of Otago, New Zealand; with an Account of the Discovery of a Low Pass from Martin's Bay to Lake Wakatipu.* By JAMES HECTOR, Esq., M.D., Provincial Geologist.* (MAP, p. 56.)

Read, December 12, 1864.

ON the 20th of March, 1863, I represented to his Honour the Superintendent that I was desirous of extending the Geological Survey of this province into the West Coast district during the following winter, and suggested that a small sailing-vessel should be placed at my disposal for that purpose. My proposal was willingly acceded to, and a schooner-rigged yacht called the *Matilda Hayes*, of 20 tons register, was selected for the service. A light whale-boat was also built for the service at Port Chalmers, 21 feet in length, so that it could be taken on the deck of the schooner.

* Abridged from the original Report in the 'Otago Provincial Government Gazette' of November 5, 1863.


Map of the Provinces
of
CANTERBURY AND OTAGO
(NEW ZEALAND)
to Illustrate the Papers of
Mr. James McKerrow, Dr. J. Haast & Dr. Hector.
English Miles
10 20 30 40 50
Dr. Haast's Journeys
Dr. Hector's Journey 1863
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168
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43
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PACIFIC OCEAN
OTAGO
Arnott Pt.
Mosquito Hill
Open Bay Is.
Haast
Rocky Range
Jackson B.
Low Sandy Beach
Cascade Pt.
Maori Vill.
Barn B.
Seal Rks.
The Cone
Awarua R.
Kaduku R.
Martins B.
May Hills
Waiuna L.
Mt. Richards
Mt. Aspiring
Mt. Thomson
Mt. Avalanche
Yates Pt.
Brig Rk.
Milford Sound
Fox Pt.
Earnslaw
Glacier
Harris Mt.
Mt. Repulse
Mt. Tyndall
Wanaka L.
Poison B.
Bell Pt.
Fourmile Pt.
Little B.
Tommy Pt.
Bligh Sound
Rugged Mt.
Mt. Longsight
Cleddau R.
Rock B.
Route B.
Stair Pk.
Flood B.
Mt. Hyde
Pembroke
George Sound
Cloudy Pass
The Castle Mtn.
Mt. Larkins
Houseroof Rk.
Looking Glass B.
Bounty Haven
Mt. Kellars
Arrowtown
Two Thumb B.
Mt. Alexander
Caswell Sound
Mt. Kane
Mt. Eglinton
Queenstown
Frankton
Wakatipu Lake
Charles Sound
Mary Pks.
Mt. Pisgah
Halfway Pk.
Livingstone
Double Cone
Ben Nevis
Nancy Sound
Emelius Arm
Howitt Pk.
Countess
Hook Pk.
Thompson Sound
Colonial Hd.
Grove Cr.
Saddle Back Pk.
Snag B.
Mt. Richmond
Mt. Lookup
Mt. Nicholas
Secretary Id.
Precipice Cove
Dana Pk.
Te Anau L.
Eyre Mountains
Diana Pk.
Doubtful Inlet
Febrero Pt.
Mt. Forbes
Shoal Cove
Mt. Lyall
Owen
Te Anau Downs
Snowdon
Kingstown
Rocky Mountains
Peninsula Pt.
Camlet R.
Spire Pk.
Black Cone
Mataura R.
Daggs Sound
Towing Hd.
Elizabeth
Mt. York
Helen Pk.
Eyre R.
Mt. Benger


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O C E A N
C A N T E R B
O T A G O
Grey R.
Arnold R.
L. Brunner
Brunner R. (Arahaura
Okitika R.
Totara R.
Bold Head
Ahead Lump
Cliffy Head
Haze Hill
Abut Head
Poeru R.
Wanganui R.
Long Pt.
Waihau R.
Kohaihai Hd.
Yellow Cliffs
Makawiho Pt.
Porangirangi
Titihai Hd.
Arnott Pt.
Mosquito Hd.
Open Bay Is.
Jackson B.
Haast R.
Maori Vill.
The Cone
Mt. Tyndall
Perpetual Snow
Mt. Cook 13,200
Mt. Darwin
Mt. Hooker
Mt. Sefton
Mt. Holmes
Mt. Stokes
Mt. Ward
Mt. Brewster
Mt. Dana
Mt. Sebastopol
Ragged Ra.
Mt. Arrowsmith
Palmer Range
Mt. Harper
Mt. Sinclair
Mt. Peel
Lake Tekapo
Alexandrina
Mackenzie Plains
L. Pukaki
Township
Burke's Pass
Valley
Lake Ohau
Upper Waitaki Plains
Ben Ohau Range
Marshalls Ferry
Arowhenua
Timaru
Pateti Pt.
Mt. Oteuku
Hunters Hills
R. Makikihi
R. Waihao, or Staff
Thrownout Pt.
Waitaki or Waitangi R.
Lower Waitaki Downs
Kurow M.
Hawkdun Mounts
Dunstan Mountains
Dunstan Pass
Mt. Ida
Oamaru
C. Wanbrow
Herbert
Moeraki Downs
Lookout Bluff
Hampden
Moeraki Roads
Whaler's Home Pt.
Moeraki
Vulcan Pt.
Kakanui Mts.
Upper Taieri Plains
N. Roughridge
Roughridge
Rock & Pillar Mtn.
Mt. Pleasant
Palmerston
Wanaka L.
Hawea L.
Newcastle
Pembroke
Upper Clutha Valley
Wakefield
Cromwell
Clyde
Alexandra
Leaning Rock
Manu-herikia Valley
Ida Burn Valley
Arrowtown
Frankton
Queenstown
Wakatipu Lake
Ben Nevis
Eyre Mountains
Kingstown
Rocky Mount
Obelisk
Carrick Ra.
Earnslaw
Mt. Aspiring
Mt. Alta
Mt. Larkins
Mt. Hyde
Mt. Benger

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NELSON
CANTERBURY
Pegasus Bay
OCEAN
Grey R.
Arnold R.
L. Brunner
L. Hochstetter (Pokarua)
Brunner R. (Arahaura)
Okitika R.
Taramakau R.
Harpers Pass
Hurunui R.
L. Sumner
Township
L. Taylor
Kaimatau Mts
Snowy Pk
Esk Hd
Mt Mytholm
Hurunui Pk
Ahead Lump
Mt Sebastopol
Black Range
Mt Noble
The Black Hills
Downs
R. Waikare
Pendle Hill
R. Hurunui
R. Ohinatara
Motunau I. (Table I.)
Mt Cass
Double Corner
Waipara R.
Kowai R.
Ragged Ra.
Mt Arrowsmith
Oxford Hill
Harewood Forest
Ashley
Oxford
Rangiora
Woodend
Kaiapoi
View H.
Burnt H.
Eyre R.
Palmer Range
L. Lyndon
Big Ben
13 Mile Bush Ra.
Malvern Hills
R. Waimakariri, or Courtenay
CHRISTCHURCH
R. Avon
Cachalot Hd
Port Cooper
Port Levy
Lyttelton
Weedon
Lincoln
Selwyn
R. Selwyn, or Waikerikeri
Mt Hutt
Mt Alford
Mt Somers
L. Acland
Mt Harper
Hororata R.
R. Rakaia, or Cholmondeley
Ferry
Township
L. Ellesmere (Waihora)
Banks Peninsula
Akaroa
Pigeon B.
Decanter B.
Akaloa B.
Longlookout Pt
Sail Rocks
Islet Hd
Flat Pt
Pompey's Pillar
Akaroa Hd
Akaroa Harbr
Island Pt
Iron Hd
Te Taumatu
Mt Peel
Ashburton R.
Wakanui Cr.
Township
Trees
Marshalls Ferry
Rangitata or Alford
Low level Country
Ninety Miles Beach
Geraldine
Opihi R.
Arowenua
R. Wanganui
Waitarakao L.
Timaru
Pateti Pt
R. Otaio
R. Makikihi
Hunters Hills
R. Hook
R. Waihao, or Stafford
Thrownout Pt
Waitangi R.
Lower Waitaki Downs
Oamaru
C. Wanbrow
Lookout Bluff
Hampden
Moeraki Roads
Whaler's Home Pt
Vulcan Pt
The Islands of
NEW ZEALAND.
170
175
35
C. Maria Van Diemen
North Cape
Doubtless B.
B. of Islands
Hokianga R.
Tutukaka
Gt Barrier I.

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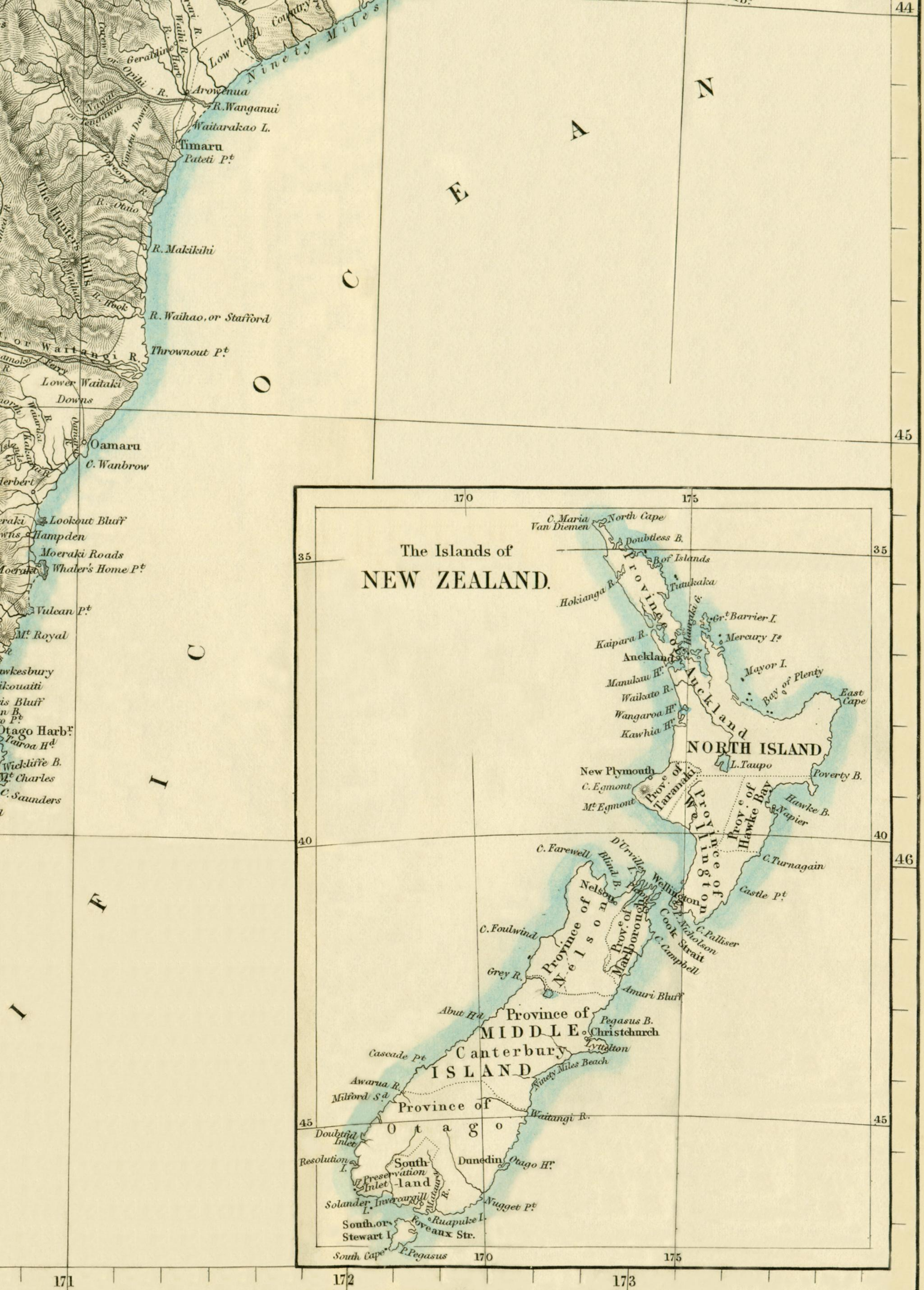

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